WE CLAIM:

1. Apparatus, comprising:

means for enabling visual observation of proper placement of an endotracheal tube in the trachea of a patient, said means comprising:

a. an endotracheal apparatus which includes a tracheal tube defining a gas path; and

b. a CO_2 detector disposed within said endotracheal apparatus at a location which is in the gas path of said tube and is visible when said endotracheal tube is inserted.

2. Apparatus as recited in claim 1, wherein said endotracheal apparatus includes an adaptor attached to said tracheal tube and wherein said detector is disposed within said adapter.

3. Apparatus as recited in claim 1, wherein said detector comprises a backing and an indicator material.

4. Apparatus as recited in claim 3, wherein said indicator material comprises a support material and a pH-sensitive dye.

5. Apparatus as recited in claim 4, wherein said support mateial is selected from the group consisting of a controlled pore glass, ion exchange resin, cellulose, collagen, polyacrylamide, polymethacrylamide, polystyrene, polylysine, polyurethane, a polyester and a polysiloxane.

6. Apparatus as recited in claim 4, wherein said pH sensitive dye is selected from the group consisting

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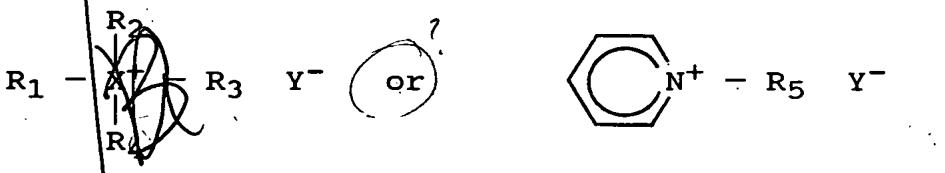
of at least one of phenol red, bromothymol blue, bromocresol purple, rosolic acid, phenolphthalein, cresol red, thymol blue, m-nitrophenol, xylenol blue, curcumin, m-cresol purple, cresolphthalalein, thymolphthalein, malachite green, N,N-dimethylanaline and bromocresol green.

7. Apparatus as recited in claim 4, wherein said indicator material further comprises a phase transport enhancer having the formula:



wherein X = N or P,

R_1, R_2, R_3 and R_4 are selected from the group consisting of C_1-C_{12} alkyl,

C_1-C_4 substituted alkyl wherein the substituent is a C_1-C_4 alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R_5 is selected from the group consisting of C_1-C_{12} alkyl and benzyl; and

Y^- is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

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8. Apparatus as recited in claim 7, wherein said phase transport enhancer is selected from the group consisting of tetrabutylammonium hydroxide, tetrabutylammonium chloride, tetraethylammonium bromide, tetraethylammonium p-toluenesulphonate, phenyltrimethylammonium chloride, benzyltrimethylammonium bromide, tetra-n-propylammonium bromide, benzyltriethylammonium tetrafluoroborate, n-dodecyltrimethylammonium bromide, tetraphenylphosphonium chloride, n-hexadecylpyridinium bromide and triphenylmethyltriphenylphosphonium chloride.

9. Apparatus recited in claim 3, wherein said detector further comprises a layer of material capable of absorbing CO_2 disposed between said support material and said backing.

10. Apparatus recited in claim 9, wherein said layer of material capable of absorbing CO_2 comprises CaO, LiOH, an alkali carbonate or ethanolamine.

11. A tracheal intubation apparatus, comprising:

a. means for receiving gas expired from a person; and

b. a detector disposed within said means for visually indicating whether a substantial concentration of CO_2 is present in said gas.

12. The tracheal intubation apparatus of claim 11, wherein said detector comprises indicator material which changes from one color in the presence of CO_2, and back to the first color in response to the absence of CO_2.

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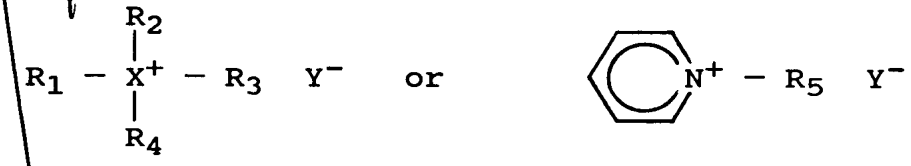
13. The tracheal intubation apparatus of claim 11, wherein said detector includes means to cycle from a first color to a second color and back to said first color, are of said first or second colors indicating the absence of CO_2 within a gas and the other of said first or second colors indicating the presence of CO_2.

14. The tracheal intubation apparatus of claim 12, wherein said indicator material comprises a support material and a pH sensitive dye.

15. The tracheal intubation apparatus of claim 14, wherein said indicator material further comprises a phase transport enhancer having the formula:



wherein X = N or P,

R_1, R_2, R_3 and R_4 are selected from the group consisting of C_1-C_{12} alkyl,

C_1-C_4 substituted alkyl wherein the substituent is a C_1-C_4 alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R_5 is C_1-C_{12} alkyl or benzyl; and

Y^- is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

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16. The tracheal intubation apparatus of claim 14, wherein said support material is porous.

17. The tracheal intubation apparatus of claim 14, wherein said support material is selected from the group consisting of a controlled pore glass, an ion exchange resin, cellulose, collagen, polyacrylamide, polymethacrylamide, polystyrene, polylysine, polyurethane, a polyester and a polysiloxane.

18. The tracheal intubation apparatus of claim 14, wherein said support material is aminopropyl controlled pore glass particles.

19. The tracheal intubation apparatus of claim 11, wherein said detector comprises a phase transport enhancer and a dye solution applied to a support material.

20. The tracheal intubation apparatus of claim 11, further comprising a thin membrane disposed over said detector.

21. The tracheal intubation apparatus of claim 12, wherein said detector further comprises a backing material.

22. The tracheal intubation apparatus of claim 21, wherein said detector further comprises a layer of material capable of absorbing CO_2 disposed between said support material and said backing material.

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23. The intubation apparatus of claim 23, wherein said layer of material capable of absorbing CO_2 comprises CaO, LiOH, an alkali carbonate or ethanolamine.

24. The intubation apparatus of claim 20 further comprising a desiccant disposed between said indicator material and said membrane.

25. A breath indicator comprising:

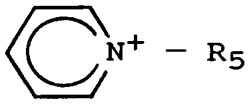
a. means for receiving CO_2;

b. a detector disposed in said means for receiving CO_2, said detector comprising means for changing between a first color and a second color, said first color indicating an absence of CO_2 and said second color indicating a presence of CO_2.

26. The breath indicator of claim 25, wherein said means for changing from a first color to a second color back to the first color comprises indicator material.

27. The breath indicator of claim 26, wherein said indicator material comprises a support material and a pH sensitive dye.

28. The breath indicator of claim 26, wherein said indicator material further comprises a phase transport enhancer having the formula:

$$R_1 - \begin{matrix} R_2 \\ | \\ X^+ \\ | \\ R_4 \end{matrix} - R_3 \quad Y^- \quad \text{or} \quad \text{  }$$

wherein X = N or P,

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R_1, R_2, R_3 and R_4 are selected from the group consisting of C_1-C_{12} alkyl,

C_1-C_4 substituted alkyl wherein the substituent is a C_1-C_4 alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R_5 is C_1-C_{12} alkyl or benzyl; and

Y^- is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

29. The breath indicator of claim 27, wherein said support material is porous.

30. The breath indicator of claim 27, wherein said support material is selected from the group consisting of a controlled pore glass, ion exchange resin, cellulose, collagen, polyacrylamide, polymethacrylamide, polystyrene, polylysine, polyurethane, a polyester and a polysiloxane.

31. The breath indicator of claim 27, wherein said indicator material comprises a phase transport enhancer and a pH-sensitive dye solution applied to a support material.

32. The breath indicator of claim 25, further comprising a thin membrane disposed over said detector.

33. The breath indicator of claim 32, further comprising a desiccant ~~dessicant~~ disposed between said indicator material and said membrane.

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34. The breath indicator of claim 26, wherein said detector comprises an indicator material and a backing material.

35. The breath indicator of claim 34, wherein said detector further comprises a layer of material capable of absorbing CO_2 disposed between said indicator material and said backing.

36. The breath indicator of claim 35, wherein said layer of material capable of absorbing CO_2 comprises CaO, LiOH, an alkali carbonate or ethanolamine.

37. The breath indicator of claim 26, wherein said detector includes means for responding to the presence of CO_2 on a time scale which enables visual breath by breath observation.

38. The breath indicator of claim 27 wherein said indicator material comprises a plurality of pH sensitive dyes, each responsive to different concentrations of CO_2.

39. A method for determining the proper placement of an endotracheal intubation device comprising inserting a device comprising:

(a) an endotracheal apparatus which includes a tracheal tube defining a gas path; and

(b) a CO_2 detector disposed within said endotracheal apparatus at a location which is in the gas path of said tube and is visible when said endotracheal tube is inserted, said detector being capable of indicating whether a substantial concentration of CO_2 is present in said gas; and

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observing a color change of the indicator which indicates the presence of CO_2 in the respiratory gas and thereby the proper placement of the endotracheal tube.

40. The method of claim 39, wherein said detector comprises a backing and an indicator material.

41. The method of claim 40, wherein said indicator material comprises a solid phase support and a pH-sensitive dye.

42. The method of claim 41, wherein said solid phase support is selected from the group consisting of a controlled pore glass, ion exchange resin, cellulose, collagen, polyacrylamide, polymethacrylamide, polystyrene, polylysine, polyurethane, a polyester and a polysiloxane.

43. The method of claim 41, wherein said pH-sensitive dye is selected from the group consisting of at least one of phenol red, bromothymol blue, bromocresol purple, rosolic acid, phenolphthalein, cresol red, thymol blue, m-nitrophenol, xylenol blue, curcumin, m-cresol purple, cresolphthalein, thymolphthalein, malachite green, N,N-dimethylanaline and bromocresol green.

44. The method of claim 41, wherein said indicator material further comprises a phase transport enhancer having the formula:

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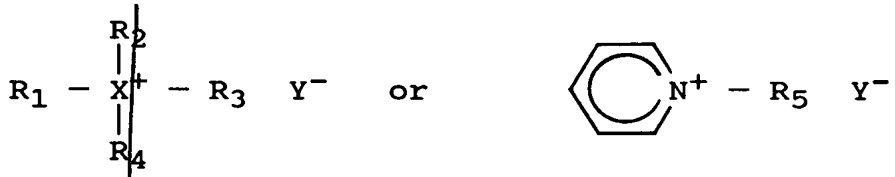

wherein X = N or P,

R_1, R_2, R_3 and R_4 are selected from the group consisting of C_1-C_{12} alkyl,

C_1-C_4 substituted alkyl wherein the substituent is a C_1-C_4 alkyl or phenyl group,

naphthyl,

benzyl, and

pyridine;

R_5 is selected from the group consisting of C_1-C_{12} alkyl and benzyl; and

Y^- is an anion selected from the group consisting of hydroxide, fluoride, chloride, bromide, iodide, carbonate and tetrafluoroborate.

45. The method of claim 44, wherein said phase transport enhancer is selected from the group consisting of tetrabutylammonium hydroxide, tetrabutylammonium chloride, tetraethylammonium bromide, tetraethylammonium p-toluenesulphonate, phenyltrimethylammonium chloride, benzyltrimethylammonium bromide, tetra-n-propylammonium bromide, benzyltriethylammonium tetrafluoroborate, n-dodecyltrimethylammonium bromide, tetraphenylphosphonium chloride, n-hexadecylpyridinium bromide and triphenylmethyltriphenylphosphonium chloride.

46. The method of claim 40, wherein said detector further comprises a layer of material, capable of absorbing CO_2, disposed between said backing and said indicator material.

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47. The method of claim 46, wherein said material capable of absorbing CO_2 comprises CaO, LiOH, an alkali carbonate or ethanolamine.

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